

**What is claimed is:**

1. A hydrocarbon cracking catalyst in which zeolite is fixed in the pores of a metal oxide support.

5        2. The hydrocarbon cracking catalyst of claim 1, wherein the zeolite is comprised in 0.1-30 wt% per 100 wt% of the metal oxide support.

3. The hydrocarbon cracking catalyst of claim 1, which is  
10        used to crack C<sub>4</sub>-C<sub>8</sub> paraffinic or olefinic hydrocarbons.

4. The hydrocarbon cracking catalyst of claim 1, wherein the metal oxide has a shape selected from the group consisting of a sphere, a Raschig ring and a Leschig ring.

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5. The hydrocarbon cracking catalyst of claim 1, wherein the metal oxide is selected from the group consisting of  $\alpha$ -alumina, silica, silica-alumina, zirconium oxide, magnesium oxide, magnesium aluminate and calcium aluminate.

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6. The hydrocarbon cracking catalyst of claim 1, wherein the zeolite has a structure of MFI, MEL, TPN, MTT or FER.

7. The hydrocarbon cracking catalyst of claim 1, wherein the zeolite is a HZSM-5 catalyst or a catalyst in which metal constituents are ion-exchanged or impregnated in HZSM-5.

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8. A method for preparing a hydrocarbon cracking catalyst comprising the steps of:

a) vacuumizing a container including metal oxide;

b) adding zeolite powder in water and stirring it to obtain

10 a slurry solution;

c) spraying the slurry solution of step (b) into the vacuum container to penetrate it into the pores of the metal oxide support; and

15 d) drying the catalyst prepared in step (c) and calcining it to fix zeolite powder in the metal oxide support.

9. The method of claim 8, which is applied to C<sub>4</sub>-C<sub>8</sub> paraffinic or olefinic hydrocarbons.

20 10. The method of claim 8, wherein the metal oxide has a shape selected from the group consisting of a sphere, a Raschig ring and a Leschig ring.

11. The method of claim 8, wherein the metal oxide is selected from the group consisting of  $\alpha$ -alumina, silica, silica-alumina, zirconium oxide, magnesium oxide, magnesium aluminate and  
5 calcium aluminate.

12. The method of claim 8, wherein the zeolite has a structure of MFI, MEL, TPN, MTT or FER.

10 13. The method of claim 8, wherein the zeolite is a HZSM-5 catalyst or a catalyst in which metal constituents are ion-exchanged or impregnated in HZSM-5.

14. The method of claim 8, wherein the zeolite is comprised  
15 in 0.1-30 wt% per 100 wt% of the metal oxide support.